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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference OPP030742KR	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2003/001212**	International filing date *(day/month/year)* **19 JUNE 2003 (19.06.2003)**	Priority date *(day/month/year)* 20 JUNE 2002 (20.06.2002)

International Patent Classification (IPC) or national classification and IPC

IPC7 C08G 64/20, C08G 64/02, C08G 64/32, B01J 31/04

Applicant

POSCO et al

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
20 JANUARY 2004 (20.01.2004)	11 OCTOBER 2004 (11.10.2004)

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2003/001212

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed

[ ] the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

[ ] the claims:
pages _____, as originally filed
pages _____, as amended (together with any statment) under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

[ ] the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

[ ] the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[X] the language of publication of the international application(under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained inthe international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages _____

[ ] the claims, Nos. _____

[ ] the drawings, sheet _____

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.
PCT/KR2003/001212

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-8	NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims	None	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: US 4,783,445 A (08 November 1988)

I . Novelty and Inventive step

Claim 1 of the present invention relates to a method of preparing a catalyst for polymerization of polycarbonate including a step of oxidizing a dicarboxylic acid precursor and a zinc precursor in water under pressurized condition. D1 relates to a method of preparing a catalyst for polymerization of polycarbonate by reacting a zinc precursor with a dicarboxylic acid.

The present invention is the same as the disclosure of D1 in reacting a zinc precursor and a dicarboxylic acid, but it is different from the disclosure of D1 in that a dicarboxylic acid is manufactured by oxidizing a dicarboxylic acid precursor in water, whereas a dicarboxylic acid reacts directly with a zinc precursor in D1. However, using a dicarboxylic acid having its precursor oxidized in water in the present invention can be regarded as a simple modification which can be easily made by a person skilled in the art. Concerning the effect so resulted in, there is not a remarkable difference since the yield of polycarbonate copolymer is 12g-15g per gram of a catalyst in the present invention and it is 12.4g per gram of a catalyst in D1.

Therefore, claim 1 of the present application cannot be considered as involving an inventive step under PCT Article 33(3).

In claims 2-7 dependent on claim 1, the equivalent ratio of a zinc precursor and a dicarboxylic acid precursor, a temperature in the step of oxidizing reaction, and a volumetric ratio of water to a dicarboxylic acid precursor and the zinc prescursor are determined, but technical feactures of the numerical determination are not disclosed in detailed description and unexpected effects which cannot be foreseen in the range of the determination do not exist. In addition, D1 discloses that a zinc precursor is zinc oxide, and other zinc precursors are equivalent compounds with a zinc oxide precursor. Though the prior art document does not disclose a dicarboxylic acid precursor, using diol as a dicarboxylic acid precursor can be arbitrarily selected by a person skilled in the art.

Therefore, claims 2-7 of the present application cannot be considered as involving an inventive step under PCT Article 33(3). (Countinued on Supplemental Box)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

BOX V

Claim 8 relates to a method of manufacturing polycarbonate by reacting carbon dioxide and alkyl oxide by using a catalyst provided in the oxidizing reaction of a dicarboxylic acid precursor and a zinc precursor in water under pressurized condition. The reaction of carbon dioxide and alkyl oxide is disclosed in D1 and the catalyst manufactured by the method of the present invention is anticipated by the subject matter of D1.

Therefore, claim 8 of the present application cannot be considered as involving an inventive under PCT Article 33(3).

II. Industrial Applicability.

The subject matter of claims 1-8 is considered to be industrially applicable under PCT Article 33(4).